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ABSTRACT

Even though readability formulas are being used more widely than ever before in schools, libraries, businesses, newspapers, and government, there are critics who argue against their use. Criticism includes blaming the formulas for the "dumbing down" of textbooks, for being poor writers' guides, and for not taking into account the background or motivation of the writer. However, there is much evidence that readability formulas are valid. They will predict (are correlated with) comprehension using traditional multiple choice questions, comprehension using cloze passages, oral reading errors, readership, subvocalization, eye voice span, functional chaining, and controlled subjective judgment. Other reasons for the dislike of readability formulas may include the wish for something to blame about the way textbooks are written, the fear that they stifle creative writing, their objectivity, or the discovery of other factors that bear on reading difficulty. Despite the criticism, research on readability formulas suggests that they are doing what they are supposed to do and have helped millions of people in many nations who, as a result of these formulas, have more suitable textbooks, consumer contracts, and newspapers. A short list of references concludes the document. (EL)

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A SECOND LOOK AT THE VALIDITY OF READABILITY

by
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Special Interest Group on Readability

Even though readability formulas are being used more widely than ever before in schools, libraries, business, newspapers, and government there are critics who argue for their disuse.

Important organizations like the International Reading Association and the National Council for Teachers of English have put out warnings on readability formula use and important research organizations like the Center for the Study of Reading at the University of Illinois and the Document Design Center of the American Institute for Research do not just question the use of readability formulas but actively disparage their use.

Kenneth Goodman (1986) speaking for the Reading Commission of NCTE states:

> Readability formulas used in selecting and rewriting materials do not produce appropriate readable texts. In fact the tinkering with texts to produce acceptable readability levels may turn them into texts which are harder to read. That's why Shiela Fitzgerald as President of NCTE and Bernice Cullinan as President of IRA have issued a joint statement calling for the abandonment of use of readability formulas in preparing and choosing school texts. (also see Cullinan & Fitzgerald, 1985)

Should we, as educators and persons interested in seeking the truth through research not look again at the validity of readability formulas. Do they work? Do they do what they are supposed to do, which is to predict how readable a given piece of prose will be for a

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given audience? Can readability formulas accurately predict whether prose passage A will be comprehended better than prose passage B by a general audience? This paper will seek to answer those questions.

This paper will not defend the misuse of formulas. Some critics blame readability formulas for the "dumbing down" of textbooks and some critics point out that readability formulas are poor writers guides. Whether or not textbooks are indeed "dumbed down" or made more readable is indeed an important distinction. Criticism of textbooks, any textbooks, but reading textbooks in particular, has long been a popular armchair preoccupation. I'm sure that the New England Primers and the McGuffey primers receive plenty of criticism, so to be criticized is partly to have done something. Dick-and-Jane jokes permeate our culture but the facts are that the old Scott Foresman series taught millions and millions of children how to read while their clever critics have frequently taught almost no one.

Textbook criticism goes beyond meer pronouncements. For example, the Center for the Study of Reading held some invitational seminars for members of the textbook publishing industry and in part blamed readability formulas for the poor quality of writing in their books.

Let me neatly state one more time; "Readability formulas are not writeability formulas." Readability formulas are not and never were intended to be writers guides. Critics, bad writers and lazy editors might blame readability formulas for poor quality textbooks but this not the formulas fault. Bread knife manufacturers are not held responsible because someone misuses their product to commit a homicide or a suicide, why do readability formulas researchers have to be

responsible for poor writing.

The most common misuses of formulas is for a writer to take the two simple inputs of most formulas and manipulate them irrationally. For example they go through the writing and chop sentences in half and plug in any old short word to try to lower the readability formula score. At worst they come out with a bunch of short choppy sentences and moronic vocabulary that looks like the piece was written by R2D2, the anthropoid robot. Goodman (1986) is guilty of this error when he states: "They (basal readers) create artificial texts by applying readability formulas to real texts"--Please, Dr. Goodman, applying a formula doesn't change the text.

In the first place if formula critics and misusers would only read the formula inputs accurately they would find that to make writing easier to read the <u>average</u> sentence length should be shorter. The term average implies that some sentences will be short and some will be longer. Both common sense and research reaffirms that some sentences need to be longer but many can be improved by being made shorter. However there are many other sentence factors in good writers guides such as cautions against embedding or splitting the kernel where subject and verb are inappropriately separated by clauses and phrases. Embedding does not necessarily change the sentence length one bit but it does affect its comprehensibility. Pearson (1974-75) is right that <u>some</u> longer sentences communicate better, but on the <u>average</u> he is wrong. Readability formulas work on the average.

There is plenty of research plus common observations that high frequency words are shorter and easier to understand (Coleman, 1971).

Just flip through the pages of the Carroll American Heritage word count and see for yourself. Sure there are plenty of exceptions. For example, "gnu" and "gyro" are not in most beginning reading vocabularies but again on the average shorter words are more common. Vocabulary selection can be improved by using a frequency list or one based on high frequency studies. Kintsch (1979) who is not particularly a fan of traditional readability formulas found that most of text difficulty could be accounted for by two factors, reinstatement searches and traditional word frequency.

However writers can further improve word selection by using a semantic study like Dale and O'Rourke's Living Word Vocabulary (1976) which tested out the different meanings of a word at different grade levels. For example, the average 4th grader knows what a "run" is in a baseball game but it is not until 12th grade that he knows what a "run" on the stock market means.

In summary, Klare (1974-75) stated:

> Unless the user is interested in doing research, there is little to be gained from choosing a highly complex formula. A simple 2 variable formula should be sufficient, especially if one of the variables is a word or semantic variable and the other is a sentence or syntactic variable.

Other factors which increase readability are paragraph length and organization, cohesion, signal words, active voice, personal words and sentences, imagability, sub-heads, referent use, illustrations, topic and example selection. I discussed these and other factors at an earlier meeting of this group and the paper on Writeability is in the ERIC system (Fry, 1982). I am the first to admit that most of these factors are not reflected in readability formulas and this is why

readability formulas are not a writers guide.

One more criticism of formulas must be met, and that is the charge that they do not take into account the background or motivation of the reader. In current research jargon, formulas are too "bottom up"; or that horror of all horrors that readability formulas are not "theory based." To these charges all I can say is "that's right." My only defense is "but they work."

Readability formulas will predict comprehension, oral reading errors, and inclination to continue reading. As George Klare (1984) has stated, their prediction ability is at least as good as reading tests, IQ tests, or most other psycho-educational measures.

There is much evidence both old and new that readability formulas are indeed valid. Fortunately readability formulas are one of the best documented educational tools that we have. Since there are well over a thousand articles and reports on readability perhaps one should start with some survey and historical prospective such as Jennie Chall's 1958 monograph or Klare's 1984 chapter in the Handbook of Educational Research. For a British view see Colin Harrison's Readability in the Classroom (Harrison, 1980).

Here are some of the validity measures. Formulas will predict (are correlated with):

Comprehension using traditional multiple choice questions.
(Fry, 1968, 1969; Keenan, 1981; Harris & Jacobson, 1976)

Comprehension using cloze passages.
(Bormuth, 1966; Carver, 1985; Entin & Klare, 1978)

Oral reading errors.
(Paolo, 1977)

Readership (a journalism concept pertaining to the number of readers for a particular article).
(Lyman, 1949; Murphy, 1947; Swanson, 1948)

Subvocalization.
(Hardyck & Petrionovich, 1970)

Eye voice span.
(Holgerson, 1977)

Functional chaining (how many words a typist continues to type after the copy page is covered).
(Rothkopf, 1977)

Controlled subjective judgment.
(Carver, 1975-76; Singer, 1975; Duffelmeyer, 1962)

Concurrent validity (formulas correlate with each other).
(Brittan & Lumpkin, 1977; Longo, 1982)

Now I ask you, if a simple two variable readability formula can do all that, why would some educators and researchers recommend that they not be used?

My suspicion is that they do not like the way most textbooks are written and they are looking for someone or something to blame. Controlled vocabularies and phonics are old whipping boys so the new bad guy is readability. It is true that occasionally an author or an editor misuses the intent of a readability formula and "cheats" by just shortening sentences to get a lower score, but this is like copying a few items while taking an IQ test then thinking you are smarter when you get a higher score.

I suspect a few critics dislike readability formulas because they fear they stiffle creative writing--I suggest they read Dr. Suess. Formulas neither encourage nor discourage creativity. Some of these same critics do not like reading tests either--how inhuman it is to objectively compare children.

Perhaps some people do not like readability formulas because they are so objective or even so mechanical if you prefer. In fact most of the formulas are so objective that they can be worked by a computer and a few are even coupled with word processors. It is shame that the word is progressing so, really writers should use quill pens and take horses to national meetings.

Other researchers discover that there are other factors that bear on reading difficulty like the structure of a paragraph or the cohesion of a passage, or the connectives used between simple sentences, or that some combined sentences make for easier reading. Readability formulas do not deny all this, they simply state that in general, on the average, two inputs of sentence length and word difficulty accurately predict how easily a given passage will be understood by the average reader.

Readability formulas are limited in that they do not take into account the background knowledge of the reader. But how pray tell can a newspaper editor go into the street each day and ask his customers how much they know about Philippine politics or how can a textbook editor expect a practical readability formula to tell him how much about frog reproduction or the Louisiana Purchase the 6th graders of the United States already know?

Certainly readability formulas have limitations but so does not using them.

1. It is one thing to think that you are the finest writer or editor in the world and that you really know the difficulty of your own prose;

2. It is one thing to think that you are the finest teacher, librarian, supervisor or school administrator in the world and that you are quite capable of judging the difficulty of the series of textbooks you are about to purchase;

3. It is one thing to think that you are the greatest lawyer at writing auto loan contracts, the greatest insurer at writing life insurance policies, or the greatest business man at writing warranties . . .

but how do you know?

I am suggesting that readability formulas will help you know something important about the difficulty of any prose passage, I am suggesting that the research proof for readability formulas doing what they are supposed to do is good and solid, and just as valid as the research for any educational or language communication procedure, and I am suggesting that present readability formulas have helped millions and millions of people in many nations by having more suitable textbooks, consumer contracts, and newspapers presented to them. Textbook adopters who do not use readability formulas are guilty of playing ostrich and sticking their heads in the sand, by not using one valuable well researched tool for book selection. They, of course, should use other factors too such as careful judgment of writing quality and subject content. Finally, I would like to challenge the critics of readability formulas to come up with something that is better in terms of overall validity and general usefulness, if they can.

REFERENCES

Bormuth, John R. "Readability: A New Approach." Reading Research Quarterly, vol. 1 (Fall, 1966), pp. 79-132.

Britton, Gwyneth and Margaret Lumpkin. A Consumer's Guide on Readability: Ginn and Company. Ginn Reading 720, 1976. Corvallis, OR: G. Britton and Associates, 1977.

Carver, Ronald P. "Measuring Prose Difficulty Using the Rauding Scale." Reading Research Quarterly, vol. 11, no. 4 (1975-1976), pp. 660-85.

Carver, R. P. "Measuring Readability Using DRP Units." Journal of Reading Behavior (in press).

Coleman, E. B. "Developing a Technology of Written Instruction: Some Determiners of the Complexity of Prose." Verbal Learning Research and the Technology of Written Instruction. E. Z. Rothkopf and P. E. Johnson, Eds. New York: Columbia University, Teachers College Press, 1971.

Cullinan, B. and S. Fitzgerald. "IRA, NCTE Take Stand on Readability Formula." Reading Today, vol. 1, no. 3 (December 1984/January 1985).

Dale, Edgar and Joseph O'Rourke. The Living Word Vocabulary. Elgin, IL: Dome, 1976.

Duffelmeyer, F. A. "A Comparison of Two Noncomputational Readability Techniques." The Reading Teacher, vol. 36 (October, 1982).

Entin, E. B. and G. R. Klare. "Some Interrelationships of Readability, Cloze, and Multiple Choice Scores on a Reading Comprehension Test." Journal of Reading Behavior, vol. 10 (1978), pp. 417-36.

Fry, Edward B. "The Readability Graph Validated at Primary Levels." The Reading Teacher, vol. 22, no. 6 (March, 1969), pp. 534-38.

Fry, Edward B. Reading Instruction for Classroom and Clinic. New York, NY: McGraw-Hill, 1972.

Fry, Edward B. Reading Instruction for Classroom and Clinic. New York, NY: McGraw-Hill, 1972.

Fry, E. B. "Fry's Readability Graph: Clarifications, Validity, and Extension to Level 17." Journal of Reading, vol. 21, no. 3 (December, 1977).

Fry, E. B. "Writeability." ERIC No. ED 220799 (April, 1982).

Goodman, K. S. "Basal Readers: A Call for Action." Language Arts, vol. 63, no. 4 (April, 1986).

Hardyck, C. D. and L. F. Petrinovich. "Subvocal Speech and Comprehension Level as a Function of the Difficulty Level of Reading Material." Journal of Verbal Learning and Verbal Behavior, no. 9 (1970), pp. 647-52.

Harris, A. J. and M. D. Jacobson. "Predicting Twelfth Graders Comprehension Scores." Journal of Reading, vol. 19 (1976), pp. 43-47.

Harrison, C. Readability in the Classroom. Cambridge: Cambridge University Press, 1980.

Harrison, C. "Readability in the United Kingdom." Journal of Reading, vol. 29, no. 6 (March, 1986).

Holgerson, Arnold S. The Relationship of Eye-Voice Span to Reading Ability and Readability. Unpublished master's thesis, Rutgers University, New Brunswick, N.J., June, 1977. (Available through ERIC.)

Keenan, D. "An Evaluation of the Effectiveness of Selected Readability Formulas Applied to Secondary Texts." Reading Horizons, vol. 22 (Winter 1981), pp. 123-128.

Kintsch, W. "On Modeling Comprehension." Educational Psychologist, vol. 14 (1979), pp. 3-14.

Klare, George R. "Assessing Readability." Reading Research Quarterly, vol. 10, no. 1 (1974-1975), pp. 62-102.

Klare, G. R. "Readability." Handbook of Reading Research. P. D. Pearson, Ed. New York: Longmans, 1984.

Longo, J. A. "The Fry Graph: Validation of the College Levels." Journal of Reading, vol. 26 (December, 1982), pp. 229-34.

Lyman, H. "Flesch Count and the Readership of Articles in a Midwestern Farm Paper." Journal of Applied Psychology, vol. 33 (1949), pp. 78-80.

Murphy, D. "How Plain Talk Increases Readership 45% to 66%." Printer's Ink, no. 218 (January 10, 1947), pp. 61-64.

Paolo, Margaret F. A Comparison of Readability Graph Scores and Oral Reading Errors on Trade Books for Beginning Reading. Unpublished master's thesis, Rutgers University, New Brunswick, N.J., January 1977. (Available through ERIC.)

Pearson, P. D. "The Effects of Grammatical Complexity on Children's Comprehension, and Conception of Certain Semantic Relations." Reading Research Quarterly, vol. 10 (1974-1975), pp. 155-92.

Rothkopf, Ernst Z. "Text Difficulty Predicted from Functional Chaining in Short Term Memory." Abstracts of Papers and Symposia. Annual Meeting, American Educational Research Association, 1977.

Singer, Harry. "The SEER Technique: A Non-Computational Procedure for Quickly Estimating Readability Level." Journal of Reading Behavior, vol. 7, no. 3 (1975), pp. 255-67.

Swanson, C. "Readability and Readership: A Controlled Experiment." Journalism Quarterly, no. 25 (1948), pp. 339-45.